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ORIGINAL ARTICLES

THE KETOGENIC DIET IN EPILEPSY.*

WILLIAM NEWTON HUGHES, A.M., M.D.

Providence, R. I.

For decades various modifications of diet have been used in the treatment of epilepsy. Certain combinations and restrictions in diet have helped a few cases, but the number improved was very small until a few years ago, when fasting and, later, the so-called ketogenic diet began to be used. Since that time it has been definitely proved that fasting tends to prevent epileptic seizures in more cases than any known modification of the diet other than that producing ketosis. Absolute fasting which can, of course, only be used temporarily is of value chiefly during periods of many seizures, since attacks recur in a few days or weeks after the fast has ended. The ketogenic diet can be continued indefinitely, as far as we know at the present time, and seems to control the seizures essentially as well as fasting. It produces much the same profound metabolic changes which occur in the body during fasting.

The ketogenic diet produces ketosis or the formation of acetone, aceto-acetic acid, beta-oxybutyric acid, etc., in the body through decrease in the carbohydrate and protein in the diet and increase in the fat. There is not enough carbohydrate to completely oxidize the fat and so the ketosis occurs. In more technical language ketosis occurs when the ketogenic factors, chiefly fat, in the diet are two or more times the antiketogenic factors, chiefly carbohydrate and protein. The ketosis is believed by Dr. William G. Lennox¹ of Boston to relieve the seizures through producing a decrease in the irritability of the nerves. Ketosis produced by ammonium chloride or calcium chloride or by breathing mix-

tures high in carbon dioxide will also prevent epileptic seizures in apparently the same way as the ketogenic diet.

The ketogenic diet is usually started with the ketogenic factors, chiefly fat, one and one-half times the antiketogenic factors, chiefly carbohydrate and protein. The diet is made more ketogenic by gradually increasing, every week or so, the proportion of the ketogenic to the antiketogenic factors as follows: 2:1, 2.5:1, 3:1, 3.5:1, 4:1 until the 4:1 diet is reached. This 4:1 diet I have continued as nearly as possible for several months. The sodium nitroprusside test for ketosis becomes positive in the urine at about the 2:1 combination and the ferric chloride test for ketosis becomes positive at the 2:5 or 3:1 combination in hospital patients. The 4:1 ketogenic diet was usually reached before the urine became Burgundy red in the ferric chloride test in ambulatory cases probably because these cases secured more food in addition to their diet than hospital patients did. The protein on the diet is kept as high as possible so as to supply the necessary assortment of amino-acids for growth and repair, and the weight and general condition of the patient is carefully followed.

I have made the diets in many cases ketogenic for each meal, and feel that it is better than the usual procedure of making them ketogenic for the day. Since each meal is ketogenic, the different meals of the same ketogenic, antiketogenic ratio can be combined by the patient to give variety provided that the total caloric intake is sufficient to maintain and increase body weight. For example, the various meals in the 4:1 ketogenic-antiketogenic diets which follow later in this paper can be combined as desired. The slight difference in protein intake during such combinations has not seemed to make any difference, as body weight has been maintained or increased easily.

All the food for each meal is weighed by the patient or parent and all of it must be eaten. No food other than that on the diet is taken, and the child is watched carefully by parent, teacher, or companions to see that he does not eat any thing

*Read before the Staff of the Homeopathic Hospital, Providence, R. I., April 15, 1929.

¹Lennox, W. G.: Ketogenic Diet in the Treatment of Epilepsy, N. E. Journ. Med. Vol. 199, No. 2: PP74-75, July 12, 1928.

between meals. An apple, a few grapes, or a piece of candy changes very quickly the ketogenic-antiketogenic constituents of the diet and seizures are at once precipitated. Olive oil is usually more easily taken than butter, but butter is taken much more readily when flavored cellulose wafers can be used to put it on.

A few samples of diets actually used for the case reported later in this paper follow:

KETOGENIC DIET 2:1.

Carbohydrate, 48.8 grams.

Protein, 28.7 grams.

Fat, 155.8 grams.

Calories, 1712.

Breakfast	C	P	F	Total Calories
15 grams cornflakes	11.8	1.1		52.
20 grams bacon		3.3	10.	105.
60 grams 40% cream	2.	2.	24.	232.
180 grams grapefruit or				
90 grams 10% fruit	6.	3.		36.
15 grams butter			12.5	112.
Bran cakes				
Cocoa shells				
	19.8	9.4	46.5	537.
Dinner				
Broth				
18 grams lean meat		4.8	3.	46.
60 grams 5% vegetables	2.	1.		12.
60 grams 40% cream	2.	2.	24.	232.
120 grams grapefruit or				
60 grams 10% fruit	4.	2.		24.
22 grams butter			18.3	165.
D-Zerta				
10 grams olive oil			10.	90.
	27.8	19.2	101.8	1106.
Supper				
Broth				
120 grams 5% vegetables	4.	2.		24.
60 grams 40% cream	2.	2.	24.	232.
15 grams cheese		4.	5.5	65.
25 grams butter			23.	207.
3 Unedas	15.	1.5	1.5	78.
	48.8	28.7	155.8	1712.

KETOGENIC DIET 2.5:1.

Carbohydrate, 27 grams.

Protein, 39.6 grams.

Fat, 166.1 grams.

Calories, 1762.

Breakfast	C	P	F	Total Calories
1 egg		6.	6.	78.
30 grams 40% cream	1.	1.	12.	116.
10 grams bacon		1.6	5.	51.
60 grams grapefruit	2.	1.		12.
36 grams butter			30.	270.
Bran cakes				
Cocoa shells				
15 grams bread	9.	1.5		42.
	12.	11.1	53.	569.

Dinner

Broth				
30 grams lean meat		8.	5.	77.
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
32 grams butter			26.6	240.
10 grams olive oil			10.	90.
D-Zerta				
15 grams bread	9.	1.5		42.
	24.	22.6	106.6	1146.

Supper

Broth				
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
34 grams cheese		9.	12.4	148.
35 grams butter			29.1	262.
1 egg		6.	6.	78.
	27.	39.6	166.1	1762.

KETOGENIC DIET 3:1.

Carbohydrate, 13.5 grams.

Protein, 41.6 grams.

Fat, 168.1 grams.

Calories, 1734.

Breakfast	C	P	F	Total Calories
1 egg		6.	6.	78.
30 grams 40% cream	1.	1.	12.	116.
10 grams bacon		1.6	5.	51.
60 grams grapefruit	2.	1.		12.
36 grams butter			30.	270.
Bran cakes				
Cocoa shells				
	3.	9.6	53.	527.
Dinner				
Broth				
30 grams lean meat		8.	5.	77.
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
32 grams butter			26.6	240.
10 grams olive oil			10.	90.
D-Zerta				
90 grams milk	4.5	3.	3.	57.
	10.5	22.6	109.6	1119.
Supper				
Broth				
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
34 grams cheese		9.	12.4	148.
35 grams butter			29.1	262.
30 grams lean meat		8.	5.	77.
	13.5	41.6	168.1	1734.

KETOGENIC DIET 3.5:1.

Carbohydrate, 16 grams.

Protein, 37.1 grams.

Fat, 187.1 grams.

Calories, 1897.

Breakfast	C	P	F	Total Calories
1 egg		6.	6.	78.
30 grams 40% cream	1.	1.	12.	116.
10 grams bacon		1.6	5.	51.
60 grams grapefruit	2.	1.		12.
36 grams butter			30.	270.
Bran cakes				
Cocoa shells				
	3.	9.6	53.	527.

Dinner	C	P	F	Total Calories
Broth				
30 grams lean meat		8.	5.	77.
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
32 grams butter			26.6	240.
31 grams olive oil			31.	279.
D-Zerta				
15 grams bread	9.	1.5		42.
	15.	21.1	127.6	1293.

Supper	C	P	F	Total Calories
Broth				
30 grams 40% cream	1.	1.	12.	116.
34 grams cheese		9.	12.4	148.
35 grams butter			29.1	262.
1 egg		6.	6.	78.
	16.	37.1	187.1	1897.

KETOGENIC DIET 4:1.

Carbohydrate, 9 grams.

Protein, 41.6 grams.

Fat, 203.1 grams.

Calories, 1931.

Breakfast	C	P	F	Total Calories
1 egg		6.	6.	78.
30 grams 40% cream	1.	1.	12.	116.
10 grams bacon		1.6	5.	51.
60 grams grapefruit	2.	1.		12.
36 grams butter			30.	270.
Bran cakes				
Cocoa shells				
	3.	9.6	53.	527.

Dinner	C	P	F	Total Calories
Broth				
30 grams lean meat		8.	5.	77.
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
32 grams butter			26.6	140.
25 grams olive oil			25.	225.
D-Zerta				
1 egg		6.	6.	78.
	6.	25.6	127.6	1175.

Supper	C	P	F	Total Calories
Broth				
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
34 grams cheese		9.	12.4	148.
35 grams butter			29.1	262.
30 grams bacon		5.	15.	155.
7 grams olive oil			7.	63.
	9.	41.6	203.1	1931.

KETOGENIC DIET 4:1.

Carbohydrate, 10.

Protein, 45.

Fat, 220.1.

Calories, 2097.

Breakfast	C	P	F	Total Calories
30 grams 40% cream	1.	1.	12.	116.
15 grams bacon		2.5	7.5	78.
90 grams grapefruit	3.	1.5		12.
15 grams cheese		4.	5.5	66.
22 grams olive oil			22.	198.
30 grams butter			25.	225.
1 egg		6.	6.	78.
Bran cakes				
Cocoa shells				
	4.	15.	78.	773.

Dinner	C	P	F	Total Calories
Broth				
60 grams fish		12.		48.
30 grams 10% vegetables	2.	.5		10.
30 grams 40% cream	1.	1.	12.	116.
32 grams butter			26.6	140.
25 grams olive oil			25.	225.
D-Zerta				
	7.	28.5	141.6	1312.

Supper	C	P	F	Total Calories
Broth				
2 eggs		12.	12.	156.
60 grams 5% vegetables	2.	1.		12.
30 grams 40% cream	1.	1.	12.	116.
15 grams bacon		2.5	7.5	78.
22 grams olive oil			22.	198.
30 grams butter			25.	225.
	10.	45.	220.1	2097.

In addition to this diet I give each patient a list of products from the catalogue of the Chicago Dietetic Supply House, Inc., which can be used to advantage with the ketogenic diet. Many of these products, such as cellu bran breakfast food, cellu chewing gum, cellu sugar free gum drops, root beer, ginger ale, and wild cherry, D-Zerta, cellu mayonnaise salad dressings, cellu bran wafers, bran agar-agar wafers, cellu cocoa nibs, cellu sugar free flavors, cellu sugarless sweetener, cellu vegetable food colorings, cellu agar jelly, and cellu India gum, can be added to the diet at any time as they are practically without food value. Other products or recipes in the catalogue such as the canned 5% and 10% vegetables and fruits, the dehydrated 5% vegetables, the corn bran muffins, the soy bean muffins, the cellu flour bread, the tomato bouillon, the beef soup with okra, and the chicken broth with egg can be figured in the diet for the patient if it is desired. Cellu chocolate

wafers, cellu cheese wafers, cellu almond wafers, and chocolate sauce can be used once a day without interfering with the ketogenic-antiketogenic factors in the diet. The Cellu products and recipes as listed in the catalogue of the Chicago Dietetic Supply House, Inc., has proved of great value in varying the monotony of the high fat diet and in securing a diet in some respects more like the diet of the normal boy or girl. They add expense to an already expensive diet, but when they can be secured, they make the diet much easier for patient, mother, and doctor.

I have the patient or parent examine the urine daily with the ferric chloride test and record any seizures that may occur. I do not at present have the sodium nitroprusside test done daily, as I did not get constant improvement in seizures until the ferric chloride test became Burgundy red.

Constipation is troublesome at times, but can usually be relieved by mineral oil, magnesium sulphate, or bitter fluid extract of cascara. After a short time the patients usually get used to the diet and constipation is no longer annoying. The large amount of fat in the diet seems to act as a mild laxative.

Calcium lactate in doses of one teaspoon three times a day is usually given to replace some of the calcium known to be excreted on a high fat diet. Children object to it, but generally it can be taken without too much distress, if some of it is given in powder form on the food and some of it in aqueous solution.

Phenobarbital or bromides may be given with the ketogenic diet if it is desired.

The following case (BH) has been treated by the ketogenic diet and luminal² grains $\frac{1}{4}$ three times a day since June 26, 1928 when she was nine years old, 54 inches tall, and weighed 64 $\frac{3}{4}$ pounds. Since the age of five years she has had petit mal seizures which for the past few years have been about ten to fifteen daily. She has never had a grand mal attack. No satisfactory cause for the seizures has ever been found, although she has been studied thoroughly by several excellent physicians. The X-rays of her head, the examination of her spinal fluid, her basal metabolism, her blood studies, and her gastro-intestinal series were all normal. She had

²Since April 15, 1929 luminal has been discontinued and no increase in attacks has occurred to the present date. Oct. 1, 1929.

been put on various diets and drugs with essentially no improvement except when fasting and the ketogenic diet were used for a short time. Her mother had never felt that the child was well enough to attend school because of these attacks; but since January 1929 the child has attended the public schools without any attack being noted at school. The petit mal seizures have been cut down by the ketogenic diet from ten to fifteen daily to none or at the most to four or five. Her mother at the present time is not sure whether the attacks she now records are really seizures or products of her own expectation. The child looks well, acts well, and seems to be growing normally. Her weight has increased to 74 pounds, which is slightly above average weight for her age and height; her bowels function adequately, and her physical condition is entirely satisfactory. She does very well at school, and in the afternoon often drives her pony cart on the street alone.

Seizures have never been noted when the ferric chloride test has been Burgundy red, and we feel that it will be possible for her to secure even better results by continued cooperation, since her ferric chloride test is not constantly positive. No ammonium chloride or calcium chloride has yet been given her to assist in securing ketosis, but this may be done in the future, if the child does not continue to improve in her ability to follow the diet. She is getting used to it and does not object as much as previously to it, though she probably still takes food not on her diet as shown by some negative ferric chloride tests. She is still on a 4:1 ketogenic-antiketogenic diet.

As shown by this case, the ketogenic diet is of more value in children than in adults, and it certainly is able satisfactorily to control petit mal and grand mal seizures in many cases. Perhaps it works best in the petit mal type.

In one of my patients, enuresis was controlled by the ketogenic diet, before petit mal seizures were adequately controlled with drugs, and one case of enuresis without petit mal or grand mal attacks responded to the ketogenic diet, after several other methods of treatment had been tried without success.

Seizures due to organic brain disease, e. g., cerebral palsy, traumatic epilepsy, and encephalitis respond to the ketogenic diet about as satisfactorily as do the cases of idiopathic epilepsy.

In adult epileptic patients³, the diet has been tried with some success, especially in petit mal attacks which can not be adequately controlled by drugs.

In concluding my paper I wish to state my conviction that the ketogenic-antiketogenic diet, though expensive and difficult to follow, is the most satisfactory diet yet devised for the treatment of epilepsy, and is well worth all the trouble and expense necessary.

³Barborka, C. J.: Ketogenic Diet Treatment of Epilepsy in Adults, Jour. A. M. A., Vol. 91, No. 2: PP 73-78 July 14, 1928.

COMMON GYNECOLOGICAL CONDITIONS AND THEIR TREATMENT.*

ANTHONY CORVESE, M. D.
Providence, R. I.

In an age of medical specialization it is well to remember that the majority of patients are first seen by general practitioners. And of no type of patient is this more true than of her who seeks relief from some gynecological condition. Marion Sims has been called the "Father of American Gynecology," yet it was but an incident in his busy country practice when he was called upon to correct a uterine displacement which a patient had sustained in a fall from her horse. That he might better see what he was about he placed her in the now universally known "Sims' position" and of his necessity devised the equally well known "Sims' speculum." No doubt many another general practitioner of that day was treating gynecological patients, but it is doubtful whether they were as efficient in any field of their endeavor. The general practitioner today enjoys innumerable advantages which Sims lacked, and it lies well within his power to care for the great majority of the ailing women who come to him for help. That he often fails to do so not only reacts to the advantage of the specializing gynecologist, but it also puts a burden upon suffering womanhood which is all too often unnecessary, and tends to lower the dignity and lessen the esteem which is the rightful due of every conscientious practitioner of medicine.

*Read before the Kent County Medical Society, April 11th, 1929.

The conditions for which gynecological consultation is most commonly sought are five: (1) Leukorrhea; (2) pain in the lower abdomen; (3) uterine hemorrhage; (4) dysmenorrhea; and (5) sterility. A comprehension of the meaning of these symptoms and the best means of relieving them should be among the attainments of every physician. It should invariably be his aim to effect this relief by the most conservative means possible; surgery being invariably regarded as a last resort.

LEUKORRHEA

Any abnormal secretion from the genital tract may be called leukorrhea. It is the most common as well as the most annoying manifestation of which gynecological patients complain. In times past it was treated either by the *laissez faire* principle or the curette was applied to the uterine endometrium. Those who opposed surgical measures prescribed douches or talked wisely about "vaginal catarrh." Today we regard temporizing measures as highly unscientific, and indiscriminate curettage of the uterus for relief of a vaginal discharge as little short of malpractice. This changed viewpoint is largely due to our wider and more accurate knowledge of genital pathology.

The first step in the investigation of a vaginal discharge is the determination of its source. The patient should be asked: Is it constant? If not, at what time does it appear? What is its character—scanty or profuse? thick and creamy? its color and odor, if any? Did it come on suddenly? after childbirth or immediately after marriage? Having received the answers to these questions, the next step is inspection of the external genitalia, a careful digital palpation of the vagina, and speculum examination of both vagina and cervix. Smears for microscopic examination should be taken in every case, and it is well to secure specimens from urethra and cervix separately.

Patients with leukorrhea fall naturally into four classes, according to age: Children with vaginal discharge; leukorrhea in virgins—at puberty or older; vaginal discharge in parous women, or those who have promiscuous sexual relations; and the discharge from the genital tract seen in women at the menopause or late in life.

In little girls we often see a vulvo-vaginitis set up by the gonococcus; less often the causal organism will be found to be the streptococcus,

micrococcus catarrhalis, or some other. We have still much to learn about the best methods of handling these young gynecological patients. The usual method is to cleanse the external genitalia with warm boric acid solution, dry the vagina and make an installation of 2 per cent mercurochrome, 1:1000 acriflavine or 1:500 silver nitrate, keeping the child in bed during treatment. In especially obstinate cases the cervix if inspected may show erosion. Under such conditions the cautery may be employed with advantage. Vaccines have been successfully used also, but whatever method one may employ there is no surety of permanent cure, for relapses are very prone to take place, and as it is frequently impossible to remove the child from the source of contamination, reinfection takes place with distressing frequency.

In virgins who have reached puberty or are past that age, leukorrhea may be the result of hypersecretion of the endocervical glands which is not bacterial in character, or may depend upon some constitutional factor. According to Graves, malposition of the cervix brought about by retroversion or antelexion of the body of the uterus, is often responsible for vaginal discharge. Erosion from friction induced where the cervix comes in contact with the anterior vaginal wall, produces it, and his remedy is to practice a suspension operation upon the uterus. This is an extreme measure, and in unmarried girls, should only be performed as a last resort after all palliative measures have proved futile.

The third class of patients is much the largest, as the great majority of parous women present some degree of leukorrhea at some time during active sexual life. It is especially common among those who have promiscuous sexual relations and in women of this type the discharge is likely to be due to hypersecretion from the endocervix, or infection in the same region. Less probable causes are urethral infection, and that seated in Skene's and Bartholin's glands. Infection of the glands is not so readily diagnosed and consequently, may often be overlooked unless special care is taken in making the examination. The general view of the profession regarding endocervicitis has changed greatly during the past few years. It is now recognized that we seldom encounter endometritis and must look for the origin of leukorrhea below the internal os. Exceptions to this

general rule are a hydro—or pyosalpinx, which may discharge its contents into uterus and vagina, but the discharge in these cases is sufficiently characteristic to make diagnosis fairly easy.

Gonorrheal infection is responsible for the major portion of all vaginal discharges, though very frequent causes are infection of the cervix by some other organism following laceration or unwise instrumentation. Some constitutional or even physis cause may occasionally be the underlying factor. But the gonococcus should always be under suspicion until proved absent, and if found the treatment must be efficient and thorough. When acute gonorrhea is present all instrumentation or active treatment of any kind must be strictly avoided. Mild antiseptic douches, and mercurochrome or acriflavine instillations in the vagina should constitute the treatment during the acute stage. When treatment becomes possible, it is important to remember that all blood or mucous must be removed from affected surfaces before any applications intended to eradicate the Neisserian infection are applied.

Latent gonorrheal infection is very often harbored by women who are completely ignorant of the cause of the leukorrhea of which they complain. As is well known, the organism may remain dormant for long periods and then be suddenly activated by some process which has an effect, upon the tissues of the genital tract, causing alterations in the blood supply to these parts. Menstruation sometimes acts as such an exciting agent, but it is more commonly the intervention of pregnancy and the trauma incident to labor, or the effect of a pelvic operation. Excessive sexual intercourse has at times, a similar effect.

The treatment of non-gonorrheal endocervicitis must be varied to suit the needs of the individual case. There is one type in which the cervix is smooth and very slightly hypertrophied, but on inspection the canal will be found filled with a thick, tenacious mucopurulent discharge, often completely plugging up the lumen. Diathermia has proved very useful in relieving such situations, and in the more usual type of chronic endocervicitis, cauterization ordinarily serves to relieve the annoying symptoms. Before resorting to cauterization the local application of such agents as iodine and silver nitrate, or the insertion of tampons should be tried. Even when cauteriza-

tion is to be done, such local treatment should be used in advance.

If the patient is elderly a vaginal discharge may be due merely to senile vaginitis, but after the menopause any such manifestation should be looked upon as strongly suspicious of malignancy, especially if it is irregularly stained with blood. Occasionally we may see cases of pyometria which discharge at intervals, but the great prevalence of cancer of the cervix uteri should put every physician on his guard when any elderly woman seeks his advice for the relief of "leukorrhea."

PAIN IN THE LOWER ABDOMEN

The causes of pain in the lower abdomen are very numerous and such varied factors produce symptoms which are in no way characteristic of any one condition that diagnosis is often extremely difficult. Any condition which affects the peritoneum will usually be productive of intense pain. Thus, even very large ovarian tumors will be painless except in those where torsion takes place, when the peritoneal irritation produced will be exceedingly painful. Tubal and ovarian disease are painful for the same reason, as it is doubtful whether a true ovarian neuralgia ever exists. When the patient locates the pain on the right side, and it is independent of the menstrual periods, one naturally thinks of a chronic infection of the appendix. This will have to be differentiated from tubal disease, but it must be remembered that one may be superimposed upon the other. Tubal involvement is often secondary to appendiceal inflammation.

If the patient complains of a dull continuous ache, from which she gets relief by assuming the recumbent position, it is likely to be due to varicose veins of the broad ligament. While fibroids are generally reckoned as being painless I have known of cases where they caused excruciating pain. One patient, while sitting in my office, was seized with a most severe pain lasting several hours, and at operation this was found to be due to the presence of an intramural fibroid. The most severe pain endured by the gynecological patient is perhaps that due to the rupture of a tubal pregnancy, but except in the very earliest stages this accident is accompanied by such grave symptoms of shock and hemorrhage that it can scarcely be classed among the conditions included in my subject.

Stricture of the ureter has during the past decade or more, received a great deal of attention as a fountain-head of "female complaints." While it undoubtedly accounts for many lower abdominal pains for which no other explanation is forthcoming, I do not reckon it as being of as great importance as constipation, an ailment from which at least nineteen out of every twenty patients who seek the gynecologist, will be found to be suffering. The complaint will ordinarily be of pain low down on the left side of the abdomen, the relaxed perineum being responsible for the "dragging down pain" of which so many complain.

In treating these patients a carefully taken history is of prime importance. When we learn of a recent miscarriage, or a full-term puerperium with rise of temperature, a puerperal infection may be surmised; if there has been a supposedly normal pregnancy during which there was bladder disturbance and profuse vaginal discharge, a search for the gonococcus had best be made. When bimanual examination reveals masses or fulness on one or both sides, and the uterus is fixed, either with or without tenderness, tubo-ovarian disease is overwhelmingly indicated. Even when no mass can be palpated it should be recalled that the adhesions which rendered the uterus immobile had their origin in an inflammatory process. If the ovaries prove to be inflamed or cystic we may look for an associated inflammation in the tubes. The findings of palpation cannot always be relied upon; not infrequently one may encounter a so-called "vanishing cyst." I have found one as large as a tangerine at one examination, and several weeks later could detect no trace of it. Such cysts are probably connected in some way with menstruation.

In ministering to these cases of abdominal pain, it will be found that—given time enough—most of the puerperal ones will right themselves. The "frozen pelvis" of the original examination will be surprisingly normal after six months or a year. Correction of local conditions such as constipation, and attention to the patient's general systemic condition are often all that is needed to effect complete cure. Acute salpingitis should be handled by complete rest in bed, hot vaginal douches under low pressure, milk injections and cold applications to the abdomen to relieve severe pain. Subacute and chronic cases may be bene-

fitted by local applications and tampons; medical diathermia is highly recommended, we have had, however, a limited experience with this method. If none of these measures is effective, operation will have to be considered. It has been our experience, however, that if re-infection can be avoided, most of these patients make a complete recovery and I have known conception to take place subsequently.

UTERINE HEMORRHAGE

The complaint of uterine bleeding is a very common one. It is of two kinds; *menorrhagia*—excessive menstruation—and *metrorrhagia*—bleeding independent of menstruation. In some patients the two conditions cannot be separated.

A most thorough physical examination should be made to rule out constitutional factors, and the pelvic inspection should be equally thorough, except possibly, in the case of a young girl. Often general anesthesia is desirable to permit complete relaxation for this examination. If a constitutional cause is discovered—such as myxedema, purpura hemorrhagica, anemia, disturbances of the circulation or liver, tuberculosis or syphilis—this must be attended to before any attention to the local condition can possibly be effective. Endocrine imbalance leading to ovarian dysfunction may induce uterine hemorrhage at any age, but is most likely to be an important factor in early adolescence or at the menopausal period. For the excessive menstruation of young girls conservative measures should always be used in treatment. Glandular therapy has proved of benefit; Graves recommends pituitary gland extract in 1 cc. doses; we have used sistomensin with some success. Ultra-violet rays, which increase the blood calcium are beneficial, and in severe cases, blood transfusion has served to preserve life. Of late radium in small dosage has been highly recommended, but in employing any form of radiation the great probability of sterilizing these young patients must be carefully reckoned with beforehand.

In older women the hemorrhages of pregnancy are always to be suspected. A very early abortion may be quite unsuspected by the patient herself. In such cases curettage will serve not only to establish the diagnosis but to effect a cure as well. *All products of curettement should be carefully examined.* Submucous fibroids are a

source of profuse and continuous bleeding, for which, until recently, surgical removal seemed the only remedy. Of late radium has been successfully used to combat both *menorrhagia* and *metrorrhagia*, and in women to whom the possibilities of future childbearing were of no especial importance, it has become the most reliable and efficient means of treatment. For younger women operation is generally to be preferred.

At or after the menopausal age endometrial hyperplasia may be a cause of uterine bleeding. Here curettage may usually be employed to advantage, all the material obtained being carefully scrutinized to rule out malignancy. Radium may be serviceable here also, but it should be an invariable rule to suspect malignancy in every case of uterine bleeding in a woman near or in the "cancer age" and to employ no local measures until it is definitely known whether or not malignancy exists. As carcinoma of the cervix has often been reported in women under thirty, and even in young girls, these precautions should be applied to practically all cases, but they become a thousand-fold more urgent as age advances. Inasmuch as uterine cancer is curable if taken early enough, it rests with the practitioner who first sees the patient to do his share toward lessening the present frightful mortality from this disease.

DYSMENORRHEA

Pain at the menstrual period is a very frequent complaint among women, and while it can often be postulated as an exacerbation of a chronic pelvic disorder producing painful symptoms—such as salpingitis, appendicitis, ovarian cysts or ureteral stricture—again it may be difficult or impossible to decide upon the precise cause of the dysmenorrhea. To this second class the convenient "cloak for ignorance"—*essential* is the term applied. We can only theorize concerning its etiology. Young girls with poor body poise are undoubtedly more subject to painful "periods" than others. Such anatomical defects as malposition of the uterus, hyperplasia, cicatricial bands at the internal os, or hypertrophy of the endometrium, undoubtedly contribute toward dysmenorrhea. The increase of active exercise and time spent out of doors by women during the past quarter century has tended to lessen the incidence of the complaint. In my personal experience two cases have been seen wherein the cause of the

pain at the menstrual period was undoubtedly due to congenital lues. I have never seen any mention of this etiologic factor in textbooks. Not a few high authorities regard all such manifestations as of psychoneurotic origin, but I am not satisfied by any explanation so far forthcoming as to which condition is primary—the dysmenorrhea or the neurosis.

Treatment for the majority of cases is still the time-honored hot-water bottle, cathartic and analgesic regime. Novak uses atropine with aspirin, and a combination of luminol and pyramidon for severe cases. Glandular therapy between the periods is often useful and the much vaunted results of galvanism and diathermy would seem to have a rational therapeutic basis. If none of these measures is effective, we may in extreme instances, have to resort to operative treatment. Graves claims 60 per cent relief by the simple expedient of dilatation and curettage. I have found the stem pessary has a decided, although limited, usefulness, despite the very general prejudice against it. None of these measures are desirable in virgins, and often only marriage will solve their difficulties. Hunner has claimed "miraculous" cures of dysmenorrhea by dilatation of the ureters. Certainly ureteral stricture ought to be considered in obstinate cases, though one may discount to a certain extent, the enthusiasm which offers this as a universal panacea for feminine ills.

STERILITY

Sterility has received a large measure of medical attention during the past decade, a fact attested by the volume of literature now available upon the subject. Whereas formerly it was universally conceded that it was invariably the woman who is "barren," modern research and experimentation has demonstrated that the male partner is at fault in at least a third of the childless marriages. No nulliparous woman should be subjected to any searching examination until it has been established beyond a doubt that her husband is physically capable of procreation. The methods of ascertaining this are now well understood but a description of them is outside the limits of my subject. If the man is found physically fit, the woman should then be subjected to a searching general and gynecological examination to determine if possible the factors preventing fecundity. Marked anomaly of the external genitals is a rare

finding, as women so afflicted are usually in no doubt as to the reason of their unfruitfulness. Infantile uterus and adnexa are more likely to be discovered as their existence is not so readily appreciated. Some common local causes operative to a greater or less degree in sterility are a highly acid vaginal secretion; endocervicitis, uterine fibrosis, chronic salpingitis and an acutely ante-flexed uterus with "pin-point" os.

Should none of these conditions be in evidence, resort may be had to the tests for tubal patency, together with X-ray examination after injection of iodized oil. It need hardly be added that none of these tests can be undertaken if the examination has shown that pelvic inflammation is present. If it is permissible to use the tests, it is generally possible to determine definitely if occlusion of the tubes exists, and we are also often placed in possession of information as to the location of the occlusion and the chances of operative relief. A persistent corpus luteum cyst may be the cause of failure to conceive.

It is often asserted that obesity and amenorrhea are the *cause* of sterility. This is inexact, for these manifestations are *effects* of the same factors which are responsible for infecundity. This is probably true also of a number of conditions looked upon as *psychic* causes of sterility, such as frigidity and sexual incompatibility. Much has recently been published regarding diet as a factor in productiveness, but it is well to bear in mind that what is perfectly true of a caged white rat may not have any bearing whatever upon the family problems of a free white woman. There is much more to be said of endocrine disturbances, particularly hypothyroidism and ovarian hypoplasia, though here too, we are leaving established fact for the uncertain ground of theory. Yet it is undeniable that glandular therapy has often seemed to be effective, and in definite cases of hypothyroidism, for example, correction of the endocrine imbalance has been followed by conception. Constitutional diseases, diabetes, nephritis and perhaps some other conditions, are likely to render a woman unfit for conception.

In treating patients who complain of sterility the psychic factor looms very large. If the organs of generation are apparently normal, or even if they show some slight variations which will still admit the possibility of the conjunction of the ovum and the sperm, there is always a chance that

the woman may conceive and the examining physician should never tell her that it is impossible. Neither should he be too optimistic as to the results of treatment. But a generally hopeful attitude on the part of both physician and patient should be maintained throughout. The treatment selected must be suited to the conditions found. Highly acid vaginal secretions may be neutralized by taking an alkaline douche before coitus; suitable local treatment should be employed to reduce pelvic inflammation. Mechanical obstructions, such as tumors, can frequently be removed with satisfactory results, and a diseased cervix receive local medication or cauterization. Dilation and the judicious use of the stem pessary (condemned by many writers) often help infantile organs and the acutely anteverted uterus, if undertaken when no pelvic inflammation is present. Galvanism and diathermia are said to do good in certain selected cases of this kind, and repeated small dosage of X-ray will serve to stimulate inert ovaries. With X-ray we have had no dependable experience.

If patency tests show occlusion of the tubes, especially when the occlusion is near the fimbriated end, there is a good chance of operative relief, if the woman is willing to undergo a laparotomy. The physician however, should be careful not to guarantee relief from childlessness. Too many other factors may be related to the one which can be positively demonstrated to make it possible to be even reasonably positive. Yet the plight if these patients is so pathetic, and their gratitude so unbounded if one is fortunate enough to be able to help them, that every physician should be urged on to leave no measure untried which offers any hope of success. I can think of nothing which can offer him any greater satisfaction than having assisted in thus serving the natural and legitimate demands of both the individual and the state.

ANNOUNCEMENTS

TO THE COUNSELLORS OF THE RADIOLOGICAL SOCIETY OF NORTH AMERICA

"The next meeting of the Radiological Society of North America will be held at Toronto, De-

cember 2nd to 6th, inclusive. Headquarters will be at the Royal York Hotel. The facilities and accommodations at this hotel are the best in the history of the Society and we expect to have a banner meeting in every way. The Scientific Program, Clinics, Scientific and Commercial Exhibits will be of the highest character and exceedingly interesting and instructive. The program will be interesting not only to the Radiologists but to the Physicians practicing other medical specialties and general practice as well. A cordial invitation is extended to all physicians as well as Radiologists to attend the Toronto Meeting. Secure reservations at once through Dr. W. C. Kruger or Dr. G. R. Reid, 20 College Street, Toronto, Canada. Excellent arrangements have been made to take care of the visiting ladies."

I feel sure that I can depend upon you to co-operate with me in this matter. Our idea will be to get the information out as much as possible among the men in other specialties of general medicine. If we can get the general medical man and other specialists to the meeting it will not only swell our attendance but also stimulate interest in advancement of Radiology.

B. C. CUSHWAY, M. D., *Chairman,
Publicity and Educational Committee.*

DR. CHEVALIER JACKSON OF PHILADELPHIA TO LECTURE AT BROCKTON

On Tuesday, October 29th, at Massasoit Hall, 6 Main St., Brockton, Mass., at 8 P. M., Dr. Chevalier Jackson of Philadelphia, eminent Bronchoscopist will lecture to the members of the Plymouth District.

The subject of his address will be: "Bronchoscopy as an Aid to the Internist and Surgeon in the Diagnosis and Treatment of Diseases of the Lung." Lantern slides and moving picture demonstrations.

We extend a cordial invitation to all physicians, members of the Rhode Island Medical Society to be present as our guests.

Sincerely yours,
THOMAS H. MCCARTHY,
*President, Plymouth District,
Massachusetts Medical Society.*

THE RHODE ISLAND MEDICAL JOURNAL

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R. I. Ophthalmological and Otolological Society—2d Thursday—October, December, February, April and Annual at call of President. Dr. Francis B. Sargent, President; Dr. Joseph E. Raia, Secretary-Treasurer.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October. Henry M. Boss, Jr., President; Dr. Jacob S. Kelley, Secretary-Treasurer.

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W. A. BERNARD	<i>President</i>	Woonsocket
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EDITORIALS

PHOTOGRAPHY IN MEDICINE.

Certainly one of the most "outstanding," as the announcer says about almost everything,—ideas in the mind today is the picture influence. We have found out that a picture produces as firm and lasting an imprint on the mind as almost any impact. The movies, the soon-to-be-realized television, the much discussed signboard and the increasing daily and weekly pictorials of the press are all familiar witnesses of this feature of pres-

ent day life. Current medical text books and literature show this influence to a marked degree, and we venture to state that the illustrated medical page receives much more attention than that relying upon description only for its medium. Not only has photography done much for publications but it is also available for case records and histories and is to be heartily recommended to both hospitals and clinics and individuals for their records. A medical paper illustrated by lantern slides commands far more interest and attention than the story alone. Assuming that everyone keeps case records it may be of interest to improve and enrich them so that they may show

clinical features in the most striking and convincing fashion. Should the case be one of disfiguring injury, a photograph before and after repair makes a permanent record for the benefit of the patient as well as the attending physician. If it is a dermatological case, photographs taken during the course of the cure are far more convincing than descriptions. Through the recent development of the X-ray a perfection of records is now made possible that has been hitherto unknown.

It is interesting to note the ease with which this method of records and teaching may be accomplished. Almost any camera will take serviceable pictures of the skin or of gross lesions, expensive apparatus being rarely if ever necessary. Add an illuminating box and you have all that is necessary for the reduction of X-ray films. In five minutes the thing is done and be it whispered that the same solutions used in the X-ray laboratory will do for the camera photography. It is not too much to claim that the enormous success of some noted hospitals and clinics is in part due to the development of a photographic laboratory along with other scientific activities, and the same material prepared for case records is available for lecture and publication. The expense of such installation and operation is almost negligible, and the technique is readily learned. The time is not far distant when we shall see motion pictures more frequently used for the demonstration of gait and other functions following operations as well as the "animated cartoon" in medical teaching methods.

PHYSICIANS AND PUBLIC HEALTH.

Ever since the modern health movement began many physicians have lamented that public health authorities and hospitals have been taking bread out of their mouths. Gradually they have been educated to the necessity of diagnostic laboratories, to most of the regulations designed to control infectious diseases although too many are remiss in the conscientious observance of some of these regulations, and other public health measures. As a whole, however, physicians heartily are in favor of preventive measures. During rec-

ent years the conception of what constitutes public health has extended to include many matters which border on the field of private practice, such as infant welfare stations, prenatal and postnatal clinics, clinics for removal of tonsils and adenoids, and for eye examinations of school children, clinics for tuberculosis and heart disease, etc. At the same time there has been a tremendous increase in the number of patients treated in hospitals, and their outpatient departments much of which is entirely charitable. A great many physicians are very resentful because they feel that it encroaches on their domain. They are obliged to furnish the medical service in these institutions without charge.

Physicians have many just reasons to complain and yet it is extremely important that they look upon the whole problem of the prevention and treatment of disease in a comprehensive manner. It is the physician who during the last half century has demonstrated what can be done by applying scientific measures in preventing illness and curing or relieving disease. The public has been "sold" to the real value of these measures and it is clamoring for a better medical service. Moreover, the people are willing to provide the necessary funds provided the cost is not too great and is properly distributed. The physician has created this situation but the movement to secure improved medical service has unfortunately fallen into the hands of illy qualified legislators and non-professional persons. Practicing physicians have too long stood by as carping critics instead of realizing the situation and offering constructive measures to meet it. For years the American Medical Association has been a severe critic and it is only in very recent years that it has begun to seriously discuss public health measures. Unfortunately there has been so much delay that the situation may now be out of hand. However, it may not be too late if physicians will only bestir themselves. The danger is that measures will be instituted which will not produce the desired results, particularly if physicians do not co-operate. As it stands today the physician is being exploited, so much of his time is being taken up by unpaid medical service. The members of no other profession contribute so much to charitable service. Many a physician has broken under the strain of private and hospital duties.

There must be ways out of this unfortunate situation by which neither the public nor the physician will suffer but they can only be discovered by careful and earnest co-operation.

The Medical Societies, state and local, are in a position to help solve the problem if their members and officers will only devote some thought and study to the problem. In Providence, a health survey has recently been conducted by a reliable national association and the Providence Medical Society has shown a very friendly and co-operative attitude in securing the data and furnishing opinions. The survey report will soon be published but the recommendations will accomplish little unless the Society further assists in putting into operation such of these recommendations as are sound and feasible. It is probable that the report of the Health Survey will carry a recommendation that the Providence Medical Society appoint a public health relations committee which would stand ready to co-operate and consult with a committee or committees which will undoubtedly be appointed to follow up the recommendations of the Survey. Such a committee of the medical society would be in a position to help safeguard the interest of private practitioners and at the same time to assist in the development of all worth while public health measures. It is quite probable that the President of the Providence Medical Society will recommend the appointment of such a committee. Obviously such a committee will carry considerable responsibility and will have many knotty problems to settle. Moreover, it will be necessary that this committee should be a live one which will follow all matters relating to local health matters.

THE MEMORY

What is more remarkable than the functioning of the brain cells which control or harbor the memory, as some transient perception of childhood, hidden for fifty years, flashes upon the consciousness of an old man? Perhaps the operation of memory intensively trained along some special line may be comparable. The mathematician may unravel a long and difficult problem involving the higher branches of his art, fol-

lowing its sequences in his memory without the aid of pencil and paper. The organist carries in his memory the effect produced by each one of hundreds of keys when modified by a hundred stops in endless combinations, and instantly detects any variation from the normal operation of the complicated mechanism. His achievement is insignificant beside that of the great composer who writes, measure by measure, page upon page of manuscript, indicating the part which each one of a hundred instruments will take and constantly knowing not only the air which each instrument will play but the combined effect of the whole upon the ear and the mind of the listener. A great physician has taken visitors on his daily hospital round, explaining to them the history, diagnosis and treatment of every patient on a large service, without referring to notes and without missing a single important point.

The complexity of modern civilization does not tend to improve the memory. The organist has stepped down from his bench to make place for the vitaphone. The mathematician depends upon a machine for addition, subtraction, multiplication and division. The reader of many books remembers that the book of a week ago was interesting but has forgotten the story and the characters. The moving picture enthusiast remembers that yesterday's picture was a fine one and advises us to see it but has forgotten the title and what it was all about. The over-trained physician is lost without the copious notes which his secretary has set down. If we ask the business man who has returned from a 100-mile trip by automobile for the features of his trip, he describes the road bed. A great educator complains that people no longer notice things.

Is it worth while to attempt to regain the perception and attention on which memory depends or shall we continue to be more and more enslaved by our ever present and increasing aids to memory? The student should certainly be required to make from memory an abstract of every book read. If the abstract misses the important points of the narrative, the book should be re-read and the abstract repeated. Perhaps it would be worth while for all of us to go more slowly and notice some of the features of the landscape.

CASE REPORT

DEATH FROM COCAINE.

By J. P. JONES, M. D.

Wakefield, R. I.

For many years cocaine has been considered dangerous when used as a local anesthetic, especially when injected. On reviewing reports from the deaths from cocaine, one finds that almost without exception the cocaine was used in a concentration greater than 0.5 of 1%. Death in the case reported here was due to the injection of $\frac{5}{8}$ of a grain of cocaine hydro-chloride in a 0.2 of 1% solution (3v of a grains 1 to 31 solution). To each ounce of this solution 8 minims of adrenalin chloride 1-1000 had been added.

A single woman, age 31, a school teacher, was admitted to the hospital. Personal history was negative. Always enjoyed good health except for occasional attacks of tonsillitis of only moderate severity. Physical examination negative except for chronic tonsillitis. Heart, lungs and kidneys were normal. Morphine sulphate grains $\frac{1}{6}$ and atrophine sulphate grains $\frac{1}{150}$ were given 45 minutes before operation. With patient in a sitting position 4 injections of a 0.2 of 1% cocaine solution of 31 each were made about the right tonsil. The patient at once became very pale and nervous. On being re-assured she became quiet and behaved nicely during the removal of the tonsil. The enucleation was done slowly with scissors and two or three bleeding points were ligated after the tonsil was removed. Up to this time about 15 minutes had been consumed since the first injection. It was noticed that the anesthesia was particularly good on this day. After removal of the first tonsil 31 of the same solution was injected in the left supra-tonsillar fossa. Probably a minute was taken up after this in working on the syringe, at the completion of which it was seen that the patient was extremely pale; her head suddenly dropped forward onto her chest; respiration became short and quick but the pulse remained very good. Almost immediately after this she went into an epileptiform convulsion in which there were clonic contractions of apparently all of the skeletal muscles. She was immediately removed to the operating table where she

would be in the recumbent position. The convulsion probably lasted less than one minute but by the time it was over she was deeply cyanosed. After the convulsion there was no voluntary respiratory movements until after she had had several artificial respirations. She now breathed for a minute or two but the cyanosis did not improve. The pulse was of a fair quality and not extremely rapid, probably 110 to the minute. After this short interval of breathing she had a much severer and longer convulsion followed by a long period of apnoea during which time artificial respirations were given and this was followed in turn by voluntary respirations for a period of probably two minutes. This sequence of events occurred four to five times before the patient's death which occurred about fifteen minutes after the first convulsion. The pulse remained remarkably good until after the last voluntary respiratory movement. After this the force of the heart action rapidly became weaker until the heart stopped about two minutes after the last respiratory movement. The pupils were not dilated until just before the heart stopped.

During the first few minutes after the convulsions began the patient was given 2 injections of from 0.5 to 1 cc. each of adrenalin chloride 1-1000 deep into the tongue.

Unfortunately the remaining cocaine solution was inadvertently thrown out so that no chemical examination could be made of it. A post mortem was not obtained.

THE CONVALESCENT CARDIAC CLINIC AT THE CRAWFORD ALLEN HOSPITAL

By

ROBERT M. LORD, M.D.

Mr. President and Members of the Rhode Island Medical Society:

About five years ago Dr. Buffum did pioneer work in establishing a heart clinic in the Children's Out Patient Department of the R. I. Hospital. He has now established many other spe-

*Read at the Meeting of the Rhode Island Medical Society, held at the Crawford Allen Hospital, Sept. 5th, 1929.

cialized clinics besides this original one. It has been my good fortune to handle this clinic for two years. After seeing a great many of these children with a varying degree of damage to the heart muscles or valves and following them outside the clinic in their homes, we felt there was a pressing need for some place where these children could get, if necessary, rest in bed and careful graduated increase in physical activity. Through the kindness and co-operation of the officials of the R. I. Hospital and the Orthopedic Staff, we have been allowed to admit a certain number of these children to the Crawford Allen Hospital. Here it is possible to have them under the close observation of nurses and we can have an accurate chart of the pulse and temperature. Most important of all, the gain in weight can be checked up frequently. In addition to this a physician visits the medical cases once every two weeks.

Of course I cannot give you gentlemen any detailed or scientific discussion on our work here at present. It is still in its infancy as we have had only 17 cases since January 1, 1929. I can however, make a few statements. So far as I remember in the 17 cases we have had no discouraging results. We have been able to increase their activity without apparent damage to the already diseased heart. We have had no cases where decompensation intervened to hold us back. All the cases have gained weight in varying degrees. But one case was discharged for lack of co-operation. In one instance, a boy named Manuel Santos, who was practically bed ridden on January 1st., we have been able to increase his physical activities so that at the present time he is able to do everything except violent exercise.

I have tried as nearly as possible to imitate the methods used at the Heart Hospital in Boston. This hospital has been very valuable as an intermediate step between the wards of the Children's Hospital and the home of the individual. It has saved many a case, I am sure, from the frequent recurrence of decompensation and has been a training ground for the individual who has a damaged heart just as Dr. Joslin's diabetic clinic has made useful citizens who have found their particular place in the world. I am not advocating the establishing of a Heart Hospital in Rhode Island because I do not believe at the

present time we can hope to support it. But I do believe that there should be a place where children and adults could be sent for a varying length of time during their convalescence from acute heart disease. I firmly believe that we might avoid extensive damage to the heart and we certainly can send these patients home better prepared and trained to lead a useful life even if their sphere of activity is limited.

SOCIETIES

THE RHODE ISLAND MEDICAL SOCIETY

The regular quarterly meeting of the Rhode Island Medical Society was held Sept. 5, 1929, at the Crawford Allen Hospital upon the invitation of the Board of Trustees of the Rhode Island Hospital.

The meeting was called to order at 12 o'clock by Dr. H. L. Barnes, 2nd Vice President, who presided in the absence of the President and 1st Vice President.

The minutes of the annual meeting were read by the Secretary and approved.

The report of Dr. Henry A. Jones, delegate from the Rhode Island Medical Society to the annual meeting of the Maine Medical Association, was read and approved.

The program consisted of the following papers:

1. "The Care of Orthopedic Cases at Crawford Allen Hospital," Dr. Roland Hammond.

He cited the advances made in the last 20 years of treatment of joint and bone tuberculosis with special reference to the use of out-door life, sea-bathing, heliotherapy, etc. The paper was discussed by Doctors J. W. Keefe and H. L. Barnes.

2. "The Convalescent Cardiac Clinic at the Crawford Allen Hospital," Dr. Robert M. Lord.

This branch of the hospital has been in operation only two years and is already showing excellent results in the treatment of heart cases.

3. "Under-water Gymnastics in the Treatment of Orthopedic Diseases," Dr. Murray S. Danforth.

Following Dr. Danforth's paper outlining the advantages of under-water gymnastic treatment of residual paralyses following polio-myelitis and allied disorders, Dr. Danforth demonstrated in the sea-water pool in the hospital how the paralyzed limbs are re-educated by these gymnastics.

On motion of Dr. Wm. R. White, duly seconded, a standing vote of thanks was extended to the Board of Trustees of the Rhode Island Hospital for their kindness in inviting the Society to hold its meeting at the Crawford Allen Hospital.

Adjournment was then taken and the Fellows gathered in the pavilion on the shore for an excellent clambake.

During the dinner Dr. J. M. Peters, superintendent of the Rhode Island Hospital, announced that the hospital had received from Senator Jesse H. Metcalf, President of the Board of Trustees of the Rhode Island Hospital, a gift of \$150,000 for the erection of a Medical Staff Building at the Rhode Island Hospital.

Adjourned,

J. W. LEECH, *Sec'y.*

REPORT OF DELEGATE TO THE ANNUAL MEETING OF MAINE MEDICAL ASSOCIATION

The Rhode Island Medical Society:

Having been appointed a Delegate from the R. I. Medical Society to attend the Annual Meeting of the Maine Medical Association, held June 17, 18, 19, at Poland Springs, I hereby inform you that I attended that meeting, and append herewith a few observations.

All members and delegates registered at the Poland Springs Hotel, which famous hostelry is located upon a high eminence and from which, on all sides, is presented an inspiring view of the surrounding country.

The proceedings of the Society were held in the Ricker House a short walk from the hotel.

The papers presented were replete with the latest advances of medical science and the discussions which followed the readings of these papers, were lucid, logical, and very instructive, and were read and discussed in plain English.

The meeting was conspicuous by the absence of the "cup eared," or hand-to-ear listeners in

the assembly hall where the papers were read, and this was, no doubt, due to the accoustics of the hall, or to the absence of those monotone, monologue artists, who, charmed with the cadences of their own cogitation, often fail to put across the platform to a strained and listening audience, those pearls of mental wisdom which have been gleaned by them in their arduous researches.

I enjoyed the Meeting, and appreciate the honor of being a Delegate from our Society.

Respectfully,

HENRY A. JONES.

POLYARTHRITIS

The result observed by Leonard G. Rowntree and Alfred W. Adson, Rochester, Minn. (*Journal A. M. A.*, July 20, 1929), in one case following sympathetic ganglionectomy and ramisectomy reveal the fact that in certain types of arthritis the sympathetic nervous system of the extremities is hyperactive, producing a marked vasomotor disturbance and profuse sweating, and possibly contributing to the spasm and atrophy of the muscles with the resultant deformities. The clinical picture is characterized by coldness of the extremities, marked sweating, tender, painful and swollen joints, and trophic changes in the muscle, skin and nails. In the case cited, all of these abnormal manifestations disappeared on release of the extremities from sympathetic control. The relief in the lower extremities was complete, lasting over a period of almost three years. Similar results were obtained in both hands following cervicothoracic sympathetic ganglionectomy, but there are still some slight residual manifestations of arthritis, slight pain and limitation of motion in both wrists. To date the results, both objective and subjective, have been astounding in this case. In the types of arthritis associated with marked bony changes, sympathetic ganglionectomy may be of little if any value; but in view of the obvious ignorance of the role of the sympathetic nerves in arthritis, the authors feel that its potentialities, even in this field, should be determined. In determining the value and limitations of sympathetic ganglionectomy in arthritis, the intelligent selection of cases obviously is of paramount importance.